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1 **Ionic liquid based ion-pairing microextraction combined with spectrophotometry for**
2 **preconcentration and quantitation of melamine in milk and milk-based products**

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9 **Abstract**

10 A simple, rapid and economical ultrasound-assisted microextraction (UA-ME) procedure was
11 developed for extraction and determination of trace amounts of melamine in milk products,
12 followed at 310 nm by UV-Visible spectrophotometry. In the study, 1-hexyl-3-
13 methylimidazolium bis(trifluoromethylsulfonyl)imide [C₆mim][Tf₂N] as ionic liquid (IL) was
14 used in presence of sodium dodecyl sulfate (SDS) as an oppositely charged auxiliary ligand at
15 pH 4.0 for extraction of melamine, and methanol was selected as a disperser solvent. Under
16 the optimal conditions, the analytical features of method were established by calibration
17 curves prepared from both solvent based calibration and matrix-matched calibration solutions.
18 The method exhibits a linear relationship (from 5 to 250 µg L⁻¹), low detection limit (1.6 µg L⁻¹),
19 good recovery (93.5-97.8%), and high sensitivity enhancement factor (125) by solvent
20 based calibration curve while it allows a detection limit of 2.1 µg L⁻¹ in range of 5-210 µg L⁻¹
21 by the matrix-matched calibration curve. The method accuracy (trueness and precision) was
22 checked by applying matrix-matched calibration strategy to all the spiked samples including
23 quality control samples as well as comparison with an independent micellar LC method, and
24 then it was successfully applied to the determination of melamine in milk based products.

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